REMARKS

Status of the Claims

- Claims 1-10 are pending in the Application after entry of this amendment.
- Claims 1-10 are rejected by Examiner.
- Claims 1-9 are amended by Applicant.

Specification Objections

The Abstract of the Specification is objected to because it does not start on a separate page and because it exceeds 150 words in length.

Applicant amends the Abstract to start on a separate page and be less than 150 words in length. Applicant submits that no new matter is added as a result of this amendment. Applicant respectfully requests reconsideration and withdrawal of the objection to the Specification as a result of the amendments.

Claim Rejections Pursuant to 35 U.S.C. §101

Claim 1-4 stand rejected under 35 U.S.C. § 101 as not falling into one of the four statutory categories of invention.

Applicant amends Claims 1-2 to be directed to a method performed by an apparatus for transmitting watermark data bits using a spread spectrum. Pending Claims 3-4 are amended to be directed to a method performed by an apparatus for regaining watermark data bits embedded in a spread spectrum. Applicant finds support for this amendment on page 3, lines 9-15 of the as-filed specification. Applicant notes that the amendment makes clear that the steps performed by Claims 1-4 are a process performed by an apparatus. Both a process and an apparatus are statutory subject matter in accordance with 35 USC § 101. Thus, the amendments to Claims 1-4 positively recite that the process steps are tied to an apparatus that accomplishes the method steps.

Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 101 rejection of Claims 1-4 in light of the amendment and remarks herein.

Claim Rejections Pursuant to 35 U.S.C. §103

Claims 1, 2, 5, 6, 9, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0169804 to Kudumakis et al. (Kudumakis) in view of U.S. Patent No. 5,319,735 to Preuss et al. (Preuss). Applicant respectfully traverses the rejection.

Kudumakis discusses insertion of a code into an input audio stream such that the inserted code is inaudible in the composite of the audio stream and inserted code. The code is inserted into the audio stream at locations where the audio stream is notch filtered to accept the code. Kudumakis operates on a frame by frame basis, inspecting the individual frequency bands within a single frame of audio input data. As stated in Kudumakis at paragraph 0021:

"*The input audio signal is digitized and processed in frames*. Once a frame of samples has been assembled, the notch frequency selection criterion is applied to determine the position of the notch frequencies. The function of the criterion is illustrated in FIG. 2. A frequency analysis technique, e.g. FFT, is applied to generate a set of spectral coefficients. The spectral coefficients are grouped to form frequency bands of approximate width 0.6-0.7 kHz. *The energy content of each band* is calculated from the corresponding spectral coefficients. The band with the maximum energy content is found. This process up to here can use part of the psycho-acoustic modeling performed by an MPEG encoder. *The notch frequencies are placed in one of the two neighboring bands*, as illustrated in the flow diagram of FIG. 2. This Figure shows that when the band with maximum energy in it is determined (B.sub.max' the code is either placed in the nearest neighbour band B.sub.max+1 if the energy peak is narrower than some threshold value, or placed in the second nearest neighbour band B.sub.max+2 if the energy peak is broad." (Kudumakis, paragraph 0021)

Thus, Kudumakis teaches that an input audio signal is processed one frame at a time, where there are multiple frequency bands in the single frame. Notch frequencies are determined and the notch frequencies are placed in *neighboring frequency bands within the single frame*. However, Kudumakis fails to teach the Claim 1 aspect of *"…wherein, in the frame following said following frame, no watermark signal carrier is transmitted in the frequency band or bands which have been occupied in said current frame*, in order to decrease watermark data bit errors caused by echoes following reception of said audio signal".

Applicant notes that Kudumakis does not discuss the content of the frame following the current frame and also does not discuss excluding watermark signal carriers in frequency bands in the next frame that are occupied by the current frame.

Preuss discusses a method to combine modified digital information with an original audio signal to form a composite audio signal which is not readily distinguishable from the original audio signal by listening. (See Preuss, col. 3, lines 15-30).

However, Preuss, like Kudumakis, also fails to disclose the Claim 1 aspect of "wherein, in the frame following said following frame, no watermark signal carrier is transmitted in the frequency band or bands which have been occupied in said current frame, in order to decrease watermark data bit errors caused by echoes following reception of said audio signal". Applicant notes that independent Claims 2, 5, and 6 likewise contain the above-mentioned distinctive aspect in Claim 1.

Thus, the combination of Kudumakis and Preuss fails to teach to suggest the aspect of excluding a transmission in a frame following a current frame of a watermark signal carrier in the frequency band or bands which have been occupied in said current frame, in order to decrease watermark data bit errors caused by echoes following reception of said audio signal as recited in pending independent Claims 1, 2, 5, and 6. As a result, the combination of Kudumakis and Preuss fails to establish a prima facie case of obviousness under 35 USC §103 under MPEP §2143 because their combination fails to disclose all of the elements of the pending claims. Also, since Claims 9 and 10 depends on patentably distinct Claims 1 and 5 respectively, then dependent Claims 9 and 10 are likewise patentably distinct over the combined cited art per MPEP §2143.03.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. §103 rejection of pending Claims 1, 2, 5, 6, 9, and 10.

Claims 3-4, and 7-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0169804 to Kudumakis et al. (Kudumakis) in view of U.S. Patent No. 5,319,735 to Preuss et al. (Preuss) and in further view of an article by LoboGuerrero entitled "Iterative Informed Audio

Hiding Scheme Using Optimal Filter". Applicant respectfully traverses the rejection.

The teachings of Kudumakis and Preuss are discussed above. LoboGuerrero discusses an informed embedding scheme for audio data using an optimal filter. Yet, like the combination of Kudumakis and Preuss, LoboGuerrero fails to disclose the aspect that in the frame following a current frame, no watermark signal carrier is transmitted in the frequency band or bands which have been occupied in said current frame, in order to decrease watermark data bit errors caused by echoes following reception of said audio signal".

As a result, the combination of Kudumakis, Preuss, and LoboGuerrero fails to form a prima facie case of obviousness under 35 USC §103 under MPEP §2143 because their combination fails to disclose all of the elements of the pending claims.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. §103 rejection of pending Claims 3-4 and 7-8.

Conclusion

Applicant respectfully submits that the amended pending claims patentably define over the cited art and respectfully requests reconsideration and withdrawal of all rejections of the pending claims based on the amendments and arguments above.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 07-0832 therefore.

Respectfully submitted,

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Date: July 9, 2009

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